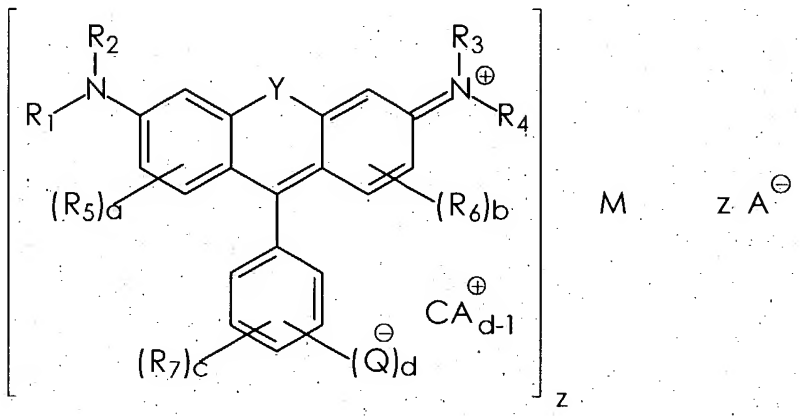
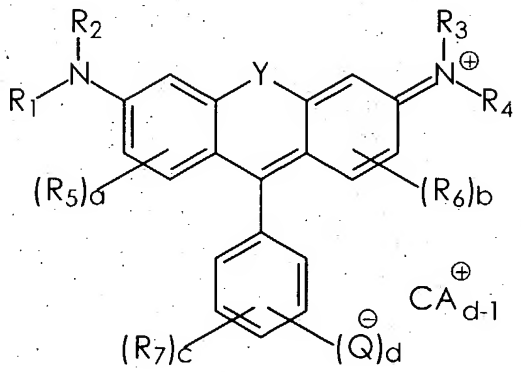
WHAT IS CLAIMED IS:

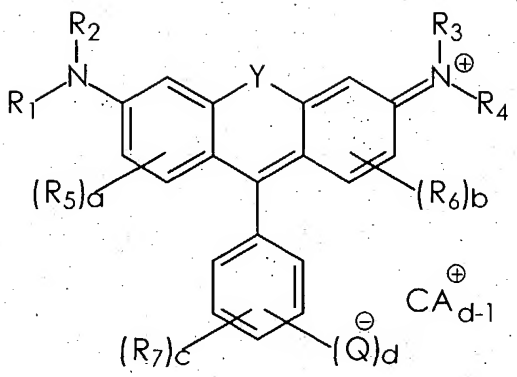
1. A phase change ink composition comprising a phase change ink carrier and a colorant compound of the formula



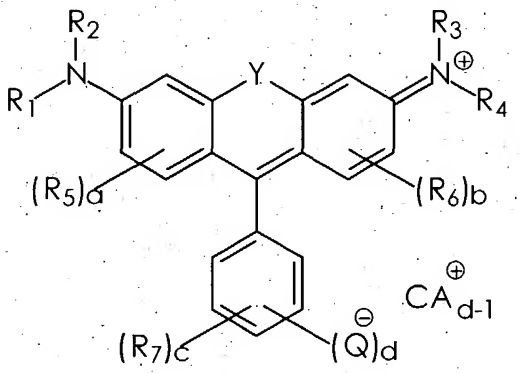
wherein M is either (1) a metal ion having a positive charge of +y wherein y is an integer which is at least 2, said metal ion being capable of forming a compound with at least two



chromogen moieties, or (2) a metal-containing moiety capable of forming a compound with at least two



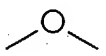
chromogen moieties, z is an integer representing the number of



chromogen moieties associated with the metal and is at least 2, R_1, R_2, R_3, and R_4 each, independently of the others, is (i) a hydrogen atom, (ii) an alkyl group, (iii) an aryl group, (iv) an arylalkyl group, or (v) an alkylaryl group, wherein R_1 and R_2 can be joined together to form a ring, wherein R_3 and R_4 can be joined together to form a ring, and wherein R_1, R_2, R_3, and R_4 can each be joined to a phenyl ring in the central structure, a and b each, independently of the others, is an integer which is 0, 1, 2, or 3, c is an integer which is 0, 1, 2, 3, or 4, each R_5, R_6, and R_7, independently of the others, is (i) an alkyl group, (ii) an aryl group, (iii) an arylalkyl group, (iv) an alkylaryl group, (v) a halogen

atom, (vi) an ester group, (vii) an amide group, (viii) a sulfone group, (ix) an amine group or ammonium group, (x) a nitrile group, (xi) a nitro group, (xii) a hydroxy group, (xiii) a cyano group, (xiv) a pyridine or pyridinium group, (xv) an ether group, (xvi) an aldehyde group, (xvii) a ketone group, (xviii) a carbonyl group, (xix) a thiocarbonyl group, (xx) a sulfate group, (xxi) a sulfide group, (xxii) a sulfoxide group, (xxiii) a phosphine or phosphonium group, (xxiv) a phosphate group, (xxv) a mercapto group, (xxvi) a nitroso group, (xxvii) an acyl group, (xxviii) an acid anhydride group, (xxix) an azide group, (xxx) an azo group, (xxxi) a cyanato group, (xxxii) an isocyanato group, (xxxiii) a thiocyanato group, (xxxiv) an isothiocyanato group, (xxxv) a urethane group, or (xxxvi) a urea group, wherein R_5, R_6, and R_7 can each be joined to a phenyl ring in the central structure,

is



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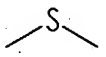

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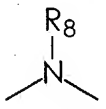

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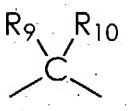
or



,

R_8, R_9, and R_{10} each, independently of the others, is (i) a hydrogen atom, (ii) an alkyl group, (iii) an aryl group, (iv) an arylalkyl group, or (v) an alkylaryl group, provided that the number of carbon atoms in $R_1+R_2+R_3+R_4+R_5+R_6+R_7+R_8+R_9+R_{10}$ is at least about 16, Q^- is a COO^- group

or a SO_3^- group, d is an integer which is 1, 2, 3, 4, or 5, A is an anion, and CA is either a hydrogen atom or a cation associated with all but one of the Q^- groups.

2. A phase change ink composition according to claim 1 wherein the phase change ink carrier comprises a monoamide, a tetra-amide, or a mixture thereof.

3. A phase change ink composition according to claim 1 wherein the phase change ink carrier comprises (a) stearyl stearamide, (b) a dimer acid based tetra-amide that is the reaction product of dimer acid, ethylene diamine, and stearic acid, or (c) mixtures thereof.

4. A phase change ink composition according to claim 1 wherein the phase change ink carrier comprises (a) stearyl stearamide, (b) a dimer acid based tetra-amide that is the reaction product of dimer acid, ethylene diamine, and a carboxylic acid having at least about 36 carbon atoms, or (c) mixtures thereof.

5. A phase change ink composition according to claim 4 wherein the carboxylic acid has at least about 40 carbon atoms, and wherein the carboxylic acid has no more than about 200 carbon atoms.

6. A phase change ink composition according to claim 1 wherein the phase change ink carrier comprises an isocyanate-derived material.

7. A phase change ink composition according to claim 1 wherein the phase change ink carrier comprises a urethane isocyanate-derived material, a urea isocyanate-derived material, a urethane/urea isocyanate-derived material, or mixtures thereof.

8. A phase change ink composition according to claim 1 wherein the phase change ink carrier comprises a mixture of one or more amides and one or more isocyanate-derived materials.

9. A phase change ink composition according to claim 1 wherein the phase change ink carrier comprises one or more materials selected from paraffins, microcrystalline waxes, polyethylene waxes, ester waxes, amide waxes, fatty acids, fatty alcohols, fatty amides, sulfonamide materials, tall oil rosins, rosin esters, ethylene/vinyl acetate copolymers, ethylene/acrylic acid copolymers, ethylene/vinyl acetate/acrylic acid copolymers, copolymers of acrylic acid with polyamides, ionomers, and mixtures thereof.

10. A phase change ink composition according to claim 1 wherein the phase change ink carrier is present in the ink in an amount of at least about 0.1 percent by weight of the ink and wherein the phase change ink carrier is present in the ink in an amount of no more than about 99 percent by weight of the ink.

11. A phase change ink composition according to claim 1 wherein the phase change ink carrier is present in the ink in an amount of at least about 50 percent by weight of the ink and wherein the phase change ink carrier is present in the ink in an amount of no more than about 98 percent by weight of the ink.

12. A phase change ink composition according to claim 1 wherein the phase change ink carrier is present in the ink in an amount of at least about 90 percent by weight of the ink and wherein the phase change ink carrier is present in the ink in an amount of no more than about 95 percent by weight of the ink.

13. A phase change ink composition according to claim 1 wherein the ink further contains an antioxidant.

14. A phase change ink composition according to claim 13 wherein the antioxidant is present in the ink in an amount of at least about 0.01 percent by weight of the ink, and wherein the antioxidant is present in the ink in an amount of no more than about 20 percent by weight of the ink.

15. A phase change ink composition according to claim 1 wherein the ink further contains a viscosity modifier.

16. A phase change ink composition according to claim 15 wherein the viscosity modifier is an aliphatic ketone.

17. A phase change ink composition according to claim 15 wherein the viscosity modifier is present in the ink in an amount of at least about 0.1 percent by weight of the ink and wherein the viscosity modifier is present in the ink in an amount of no more than about 99 percent by weight of the ink.

18. A phase change ink composition according to claim 1 wherein the ink carrier comprises (a) a polyethylene wax, (b) a stearyl stearamide wax, (c) a dimer acid based tetra-amide that is the reaction product of dimer acid, ethylene diamine, and a carboxylic acid having at least about 36 carbon atoms, (d) a urethane resin derived from the reaction of two equivalents of hydroabietyl alcohol and one equivalent of isophorone diisocyanate, (e) a urethane resin that is the adduct of three equivalents of stearyl isocyanate and a glycerol-based alcohol, and (f) an antioxidant.

19. A phase change ink composition according to claim 1 wherein the ink carrier comprises (a) a polyethylene wax in an amount of at least about 25 percent by weight of the ink and in an amount of no more than about 60 percent by weight of the ink, (b) a stearyl stearamide wax in an amount of at least about 8 percent by weight of the ink and in an amount of no more than about 32 percent by weight of the ink, (c) a dimer acid based tetra-amide that is the reaction product of dimer acid, ethylene diamine, and a carboxylic acid having at least about 36 carbon atoms in an amount of at least about 10 percent by weight of the ink and in an amount of no more than about 32 percent by weight of the ink, (d) a urethane resin derived from the reaction of two equivalents of hydroabietyl alcohol and one equivalent of isophorone diisocyanate in an amount of at least about 6 percent by weight of the ink and in an amount of no more than about 16 percent by weight of the ink, (e) a urethane resin that is the adduct of three equivalents of stearyl isocyanate and a glycerol-based alcohol in an amount of at least about 2 percent by weight of the ink and in an amount of no more than about 13 percent by weight of the ink, and (f) an antioxidant in an amount of at least about 0.01 percent by weight of the ink and in an amount of no more than about 1 percent by weight of the ink.

20. A phase change ink composition according to claim 1 wherein the colorant is present in the ink in an amount of at least about 0.1 percent by weight of the ink.

21. A phase change ink composition according to claim 1 wherein the colorant is present in the ink in an amount of at least about 0.5 percent by weight of the ink.

22. A phase change ink composition according to claim 1 wherein the colorant is present in the ink in an amount of at least about 1 percent by weight of the ink.

23. A phase change ink composition according to claim 1 wherein the colorant is present in the ink in an amount of no more than about 20 percent by weight of the ink.

24. A phase change ink composition according to claim 1 wherein the colorant is present in the ink in an amount of no more than about 13 percent by weight of the ink.

25. A phase change ink composition according to claim 1 wherein the colorant is present in the ink in an amount of no more than about 6 percent by weight of the ink.

26. A phase change ink composition according to claim 1 wherein the ink has a melting point of no lower than about 50°C and wherein the ink has a melting point of no higher than about 160°C.

27. A phase change ink composition according to claim 1 wherein the ink has a melting point of no lower than about 70°C and wherein the ink has a melting point of no higher than about 140°C.

28. A phase change ink composition according to claim 1 wherein the ink has a melting point of no lower than about 80°C and wherein the ink has a melting point of no higher than about 100°C.

29. A phase change ink composition according to claim 1 wherein the ink has a melt viscosity at a temperature of about 140°C of no more than about 30 centipoise.

30. A phase change ink composition according to claim 1 wherein the ink has a melt viscosity at a temperature of about 140°C of no more than about 20 centipoise.

31. A phase change ink composition according to claim 1 wherein the ink has a melt viscosity at a temperature of about 140°C of no more than about 15 centipoise.

32. A phase change ink composition according to claim 1 wherein the ink has a melt viscosity at a temperature of about 140°C of no less than about 1 centipoise.

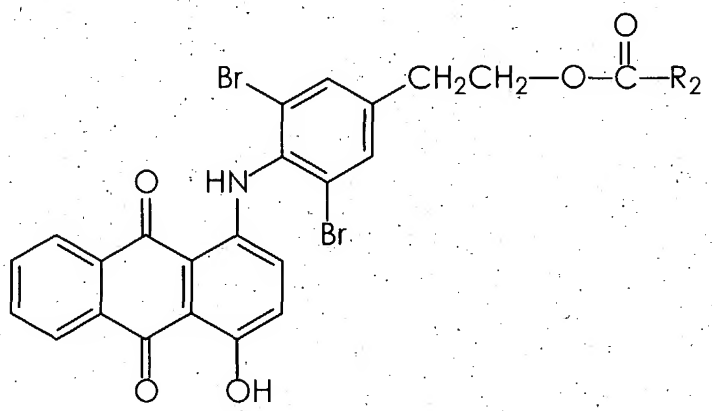
33. A phase change ink composition according to claim 1 wherein the ink has a melt viscosity at a temperature of about 140°C of no less than about 5 centipoise.

34. A phase change ink composition according to claim 1 wherein the ink has a melt viscosity at a temperature of about 140°C of no less than about 7 centipoise.

35. A phase change ink composition according to claim 1 further containing an anthraquinone colorant.

36. A phase change ink composition according to claim 35 wherein the anthraquinone colorant is Solvent Red 172.

37. A phase change ink composition according to claim 35 wherein the anthraquinone colorant is of the formula



wherein R_2 is a linear alkyl group having an average of about 50 carbon atoms.

38. A phase change ink composition according to claim 1 further containing an acid having a K_a value greater than that of the K_a of the Q and/or Q⁻ groups on the colorant.

39. A phase change ink composition according to claim 38 wherein the acid is para-toluene-sulfonic acid, dodecylbenzenesulfonic acid, hydrochloric acid, trifluoroacetic acid, methylsulfonic acid, trifluoromethyl sulfonic acid, hydrobromic acid, or a mixture thereof.

40. A phase change ink composition according to claim 1 wherein M is a metal ion of a metal selected from magnesium, calcium, strontium, barium, radium, aluminum, gallium, germanium, indium, tin, antimony, tellurium, thallium, lead, bismuth, polonium, scandium, titanium, vanadium, chromium, manganese, iron, cobalt, nickel, copper, zinc, zirconium, niobium molybdenum, technetium, ruthenium, rhodium, palladium, silver, cadmium, hafnium, tantalum, tungsten, rhenium, osmium, iridium, platinum, gold, mercury, metals of the lanthanide series, metals of the actinide series, and mixtures thereof.

41. A phase change ink composition according to claim 1 wherein M is a metal ion of a metal selected from zinc, calcium, bismuth, tin, iron, copper, aluminum, nickel, titanium, chromium, or mixtures thereof.

42. A phase change ink composition according to claim 1 wherein M is a zinc metal ion.

43. A phase change ink composition according to claim 1 wherein M is a metal-containing moiety which is a metal ionic moiety.

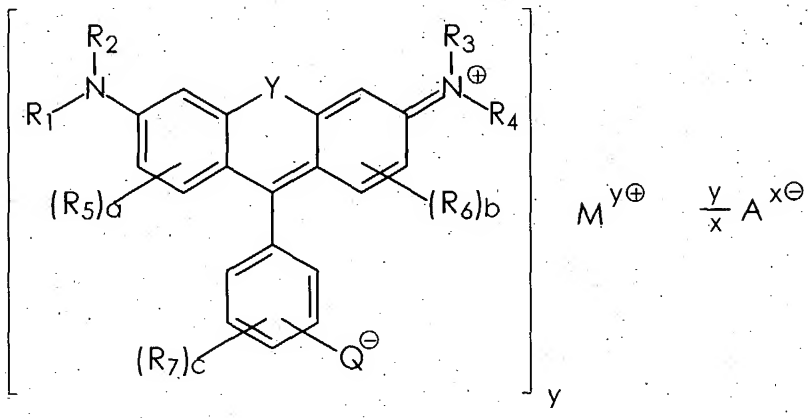
44. A phase change ink composition according to claim 1 wherein M is a metal-containing moiety which is a metal coordination compound.

45. A phase change ink composition according to claim 1 wherein M is a metal-containing moiety which is a heteropolyacid.

46. A phase change ink composition according to claim 45 wherein the heteropolyacid is a phosphotungstic acid, a silicotungstic acid, a phosphomolybdic acid, or a mixture thereof.

47. A phase change ink composition according to claim 45 wherein the heteropolyacid is a mixture of phosphomolybdic acid and phosphotungstic acid.

48. A phase change ink composition according to claim 1 wherein the compound is of the formula



wherein M is a metal cation, y is an integer representing the charge on the metal cation and is at least 2, A is an anion, and x is an integer representing the charge on the anion.

49. A phase change ink composition according to claim 1 wherein a, b, and c are each zero.

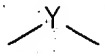
50. A phase change ink composition according to claim 1 wherein d is 1.

51. A phase change ink composition according to claim 1 wherein d is 2.

52. A phase change ink composition according to claim 1 wherein d is 1 and Q^- is a COO^- group.

53. A phase change ink composition according to claim 1 wherein d is 1 and Q^- is a SO_3^- group.

54. A phase change ink composition according to claim 1 wherein



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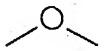

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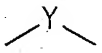
55. A phase change ink composition according to claim 1 wherein



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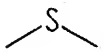

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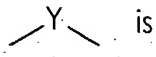
56. A phase change ink composition according to claim 1 wherein



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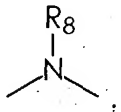
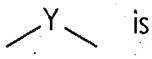


57. A phase change ink composition according to claim 1 wherein



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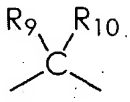


58. A phase change ink composition according to claim 1 wherein at least one of R_1, R_2, R_3, and R_4 is an alkyl group.

59. A phase change ink composition according to claim 58 wherein the alkyl group is a linear alkyl group.

60. A phase change ink composition according to claim 58 wherein the alkyl group is a branched alkyl group.

61. A phase change ink composition according to claim 58 wherein the alkyl group is a saturated alkyl group.

62. A phase change ink composition according to claim 58 wherein the alkyl group is an unsaturated alkyl group.

63. A phase change ink composition according to claim 58 wherein the alkyl group is a cyclic alkyl group.

64. A phase change ink composition according to claim 58 wherein the alkyl group is a substituted alkyl group.

65. A phase change ink composition according to claim 58 wherein the alkyl group is an unsubstituted alkyl group.

66. A phase change ink composition according to claim 58 wherein the alkyl group has at least about 18 carbon atoms.

67. A phase change ink composition according to claim 58 wherein at least one hetero atom selected from oxygen, nitrogen, sulfur, silicon, or phosphorus is present in the alkyl group.

68. A phase change ink composition according to claim 58 wherein no hetero atoms are present in the alkyl group.

69. A phase change ink composition according to claim 1 wherein at least one of R_1, R_2, R_3, and R_4 is an aryl group.

70. A phase change ink composition according to claim 69 wherein the aryl group is a substituted aryl group.

71. A phase change ink composition according to claim 69 wherein the aryl group is an unsubstituted aryl group.

72. A phase change ink composition according to claim 69 wherein at least one hetero atom selected from oxygen, nitrogen, sulfur, silicon, or phosphorus is present in the aryl group.

73. A phase change ink composition according to claim 69 wherein no hetero atoms are present in the aryl group.

74. A phase change ink composition according to claim 1 wherein at least one of R_1, R_2, R_3, and R_4 is an arylalkyl group.

75. A phase change ink composition according to claim 74 wherein the arylalkyl group is a substituted arylalkyl group.

76. A phase change ink composition according to claim 74 wherein the arylalkyl group is an unsubstituted arylalkyl group.

77. A phase change ink composition according to claim 74 wherein at least one hetero atom selected from oxygen, nitrogen, sulfur, silicon, or phosphorus is present in the arylalkyl group.

78. A phase change ink composition according to claim 74 wherein no hetero atoms are present in the arylalkyl group.

79. A phase change ink composition according to claim 1 wherein at least one of R_1, R_2, R_3, and R_4 is an alkylaryl group.

80. A phase change ink composition according to claim 79 wherein the alkylaryl group is a substituted alkylaryl group.

81. A phase change ink composition according to claim 79 wherein the alkylaryl group is an unsubstituted alkylaryl group.

82. A phase change ink composition according to claim 79 wherein at least one hetero atom selected from oxygen, nitrogen, sulfur, silicon, or phosphorus is present in the alkylaryl group.

83. A phase change ink composition according to claim 79 wherein no hetero atoms are present in the alkylaryl group.

84. A phase change ink composition according to claim 1 wherein R_1 and R_2 are joined together to form a ring.

85. A phase change ink composition according to claim 1 wherein R_1 and R_2 are joined together to form a ring and wherein R_3 and R_4 are joined together to form a ring.

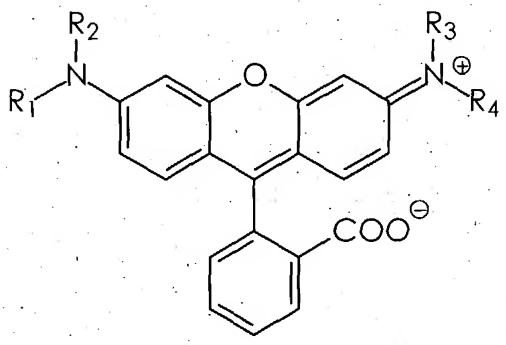
86. A phase change ink composition according to claim 1 wherein at least one of R_1, R_2, R_3, and R_4 is joined to a phenyl ring in the central structure.

87. A phase change ink composition according to claim 1 wherein the number of carbon atoms in $R_1+R_2+R_3+R_4+R_5+R_6+R_7+R_8+R_9+R_{10}$ is at least about 32.

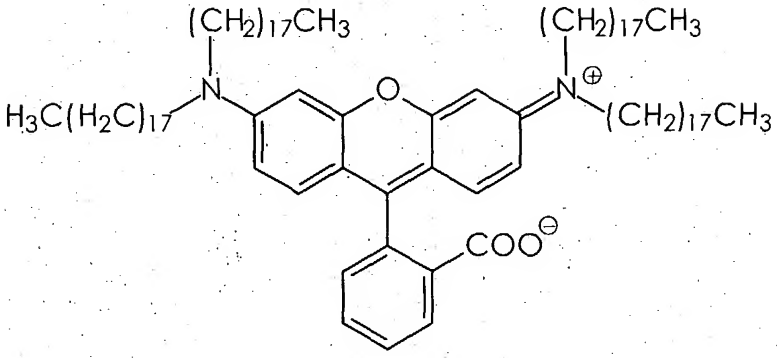
88. A phase change ink composition according to claim 1 wherein the number of carbon atoms in $R_1+R_2+R_3+R_4+R_5+R_6+R_7+R_8+R_9+R_{10}$ is at least about 48.

89. A phase change ink composition according to claim 1 wherein the number of carbon atoms in $R_1+R_2+R_3+R_4+R_5+R_6+R_7+R_8+R_9+R_{10}$ is at least about 72.

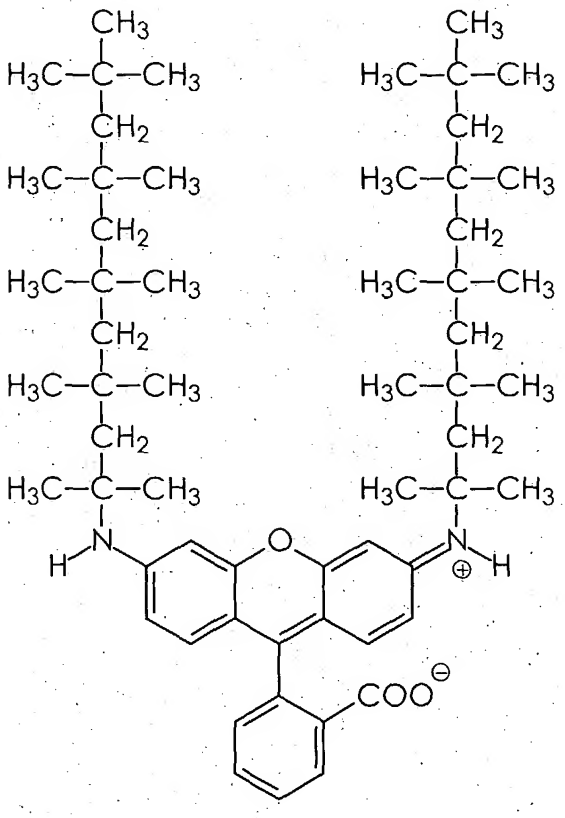
90. A phase change ink composition according to claim 1 wherein the chromogen is of the formula



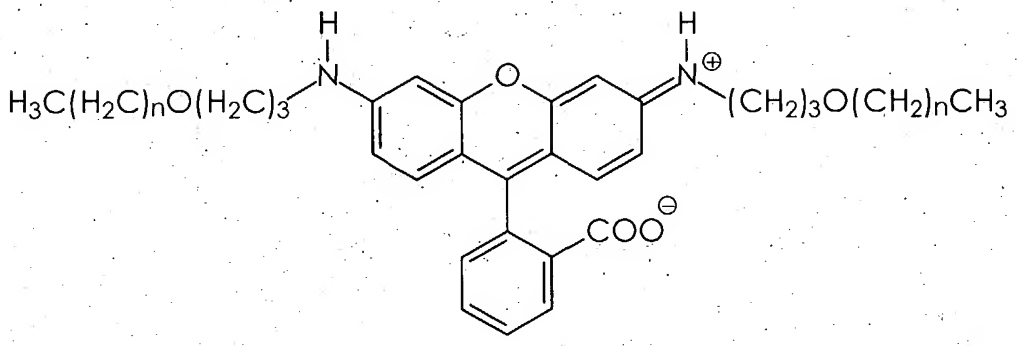
91. A phase change ink composition according to claim 1 wherein the chromogen is of the formula



92 A phase change ink composition according to claim 1 wherein the chromogen is of the formula

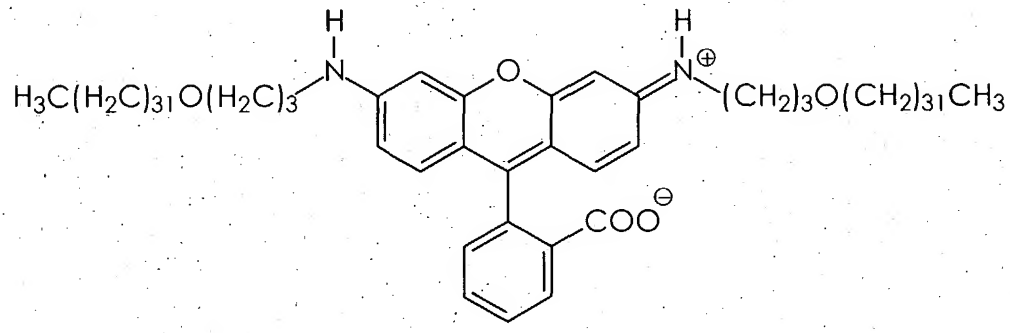


93. A phase change ink composition according to claim 1 wherein the chromogen is of the formula

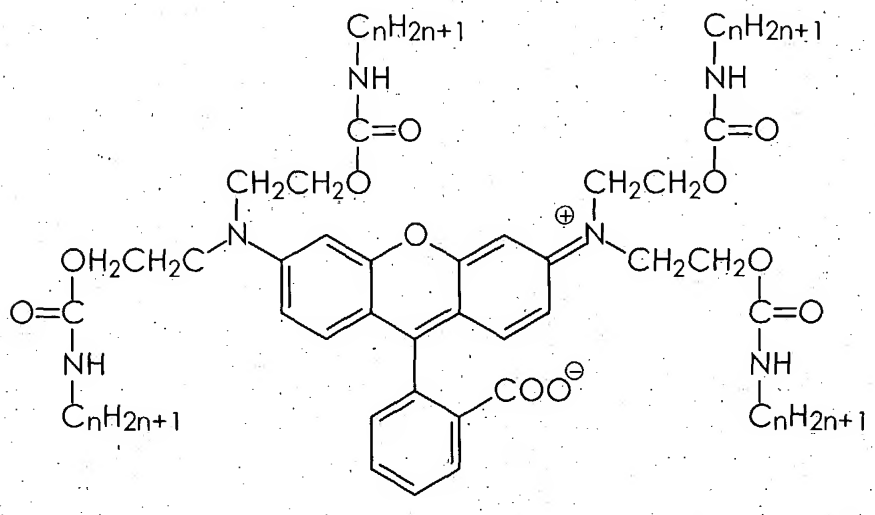


wherein n is at least about 11.

94. A phase change ink composition according to claim 1 wherein the chromogen is of the formula

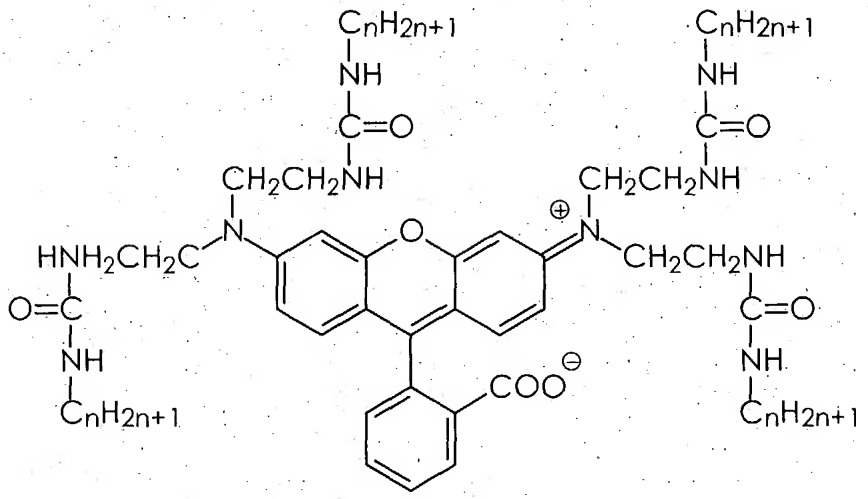


95. A phase change ink composition according to claim 1 wherein the chromogen is of the formula



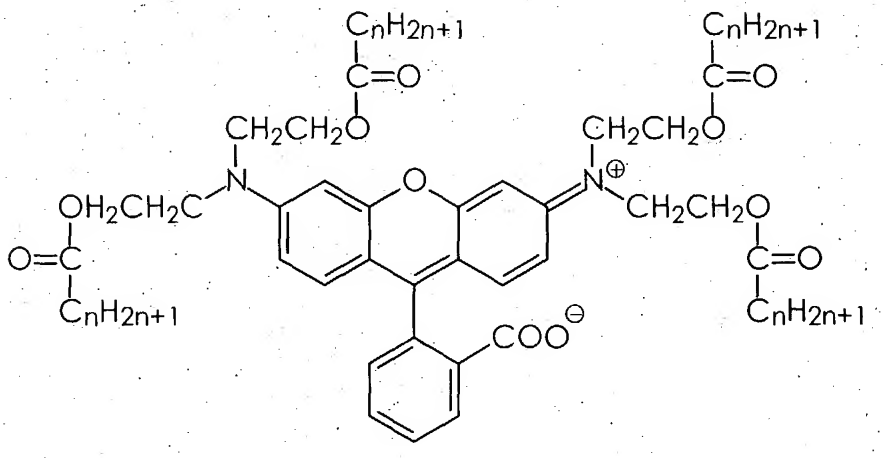
wherein n is at least about 12.

96. A phase change ink composition according to claim 1 wherein the chromogen is of the formula



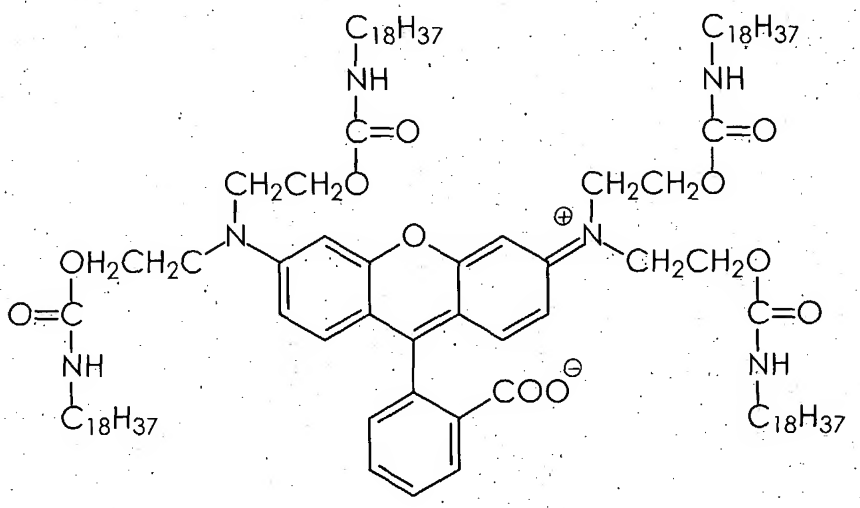
wherein n is at least about 12.

97. A phase change ink composition according to claim 1 wherein the chromogen is of the formula

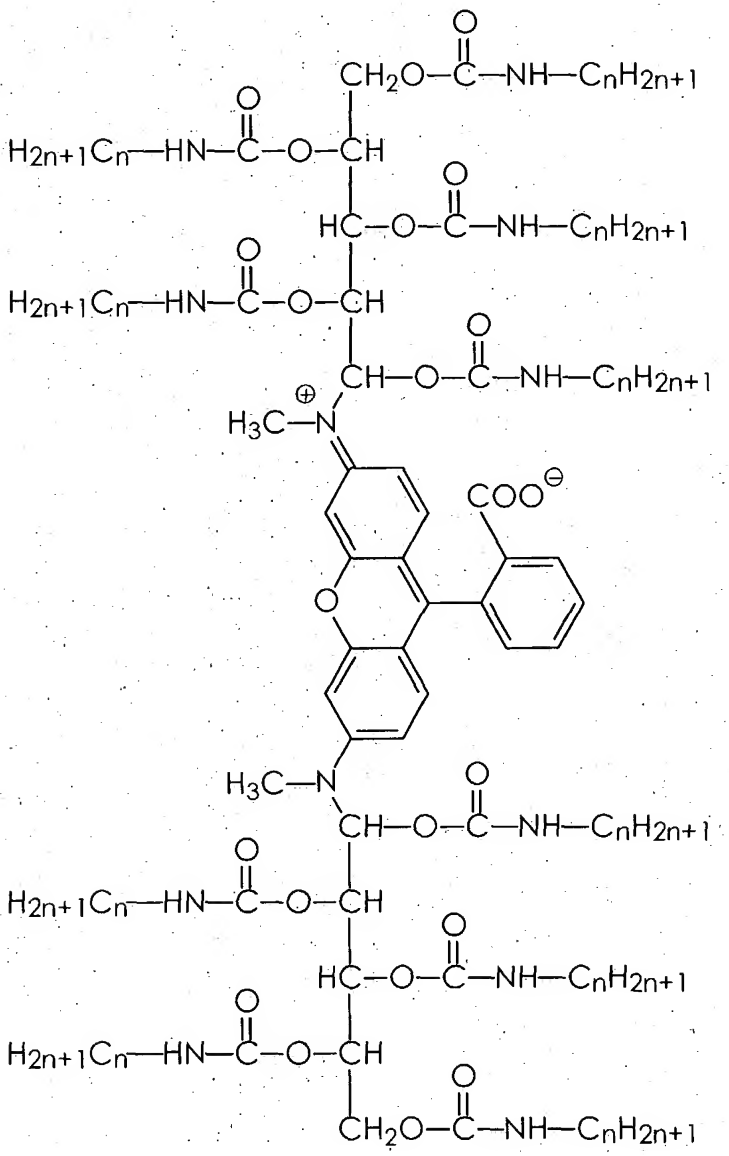


wherein n is at least about 12.

98. A phase change ink composition according to claim 1 wherein the chromogen is of the formula

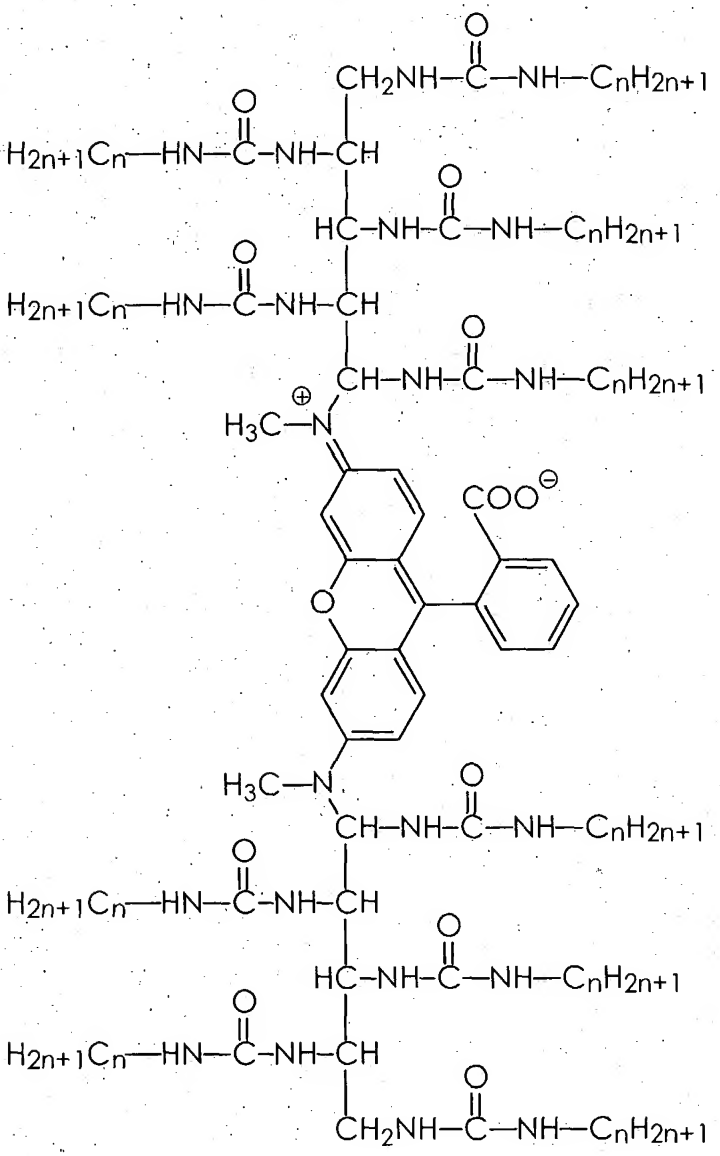


99. A phase change ink composition according to claim 1 wherein the chromogen is of the formula



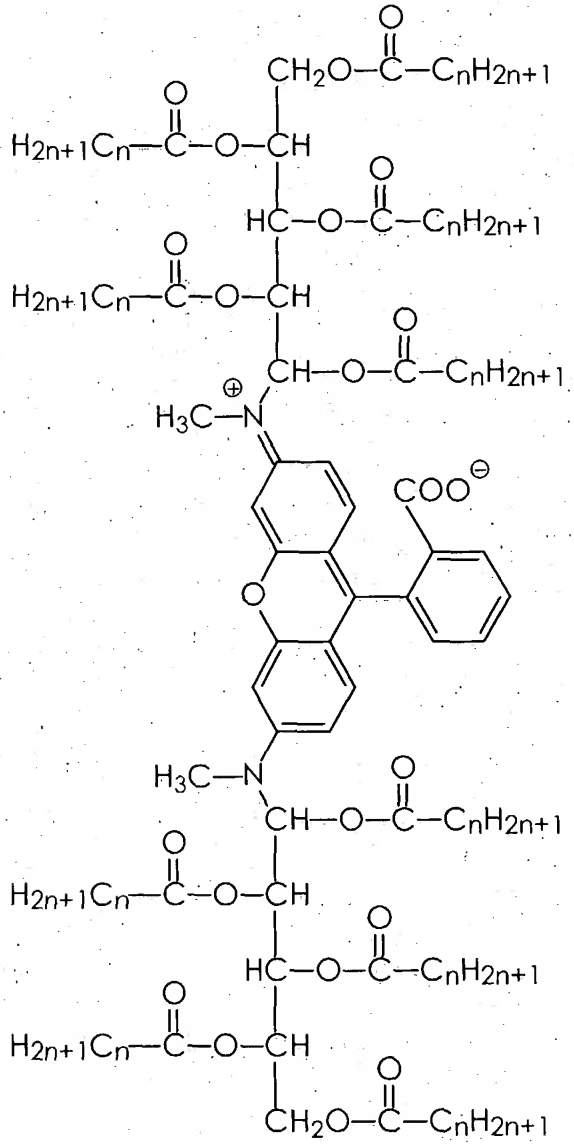
wherein n is at least about 12.

100. A phase change ink composition according to claim 1 wherein the chromogen is of the formula



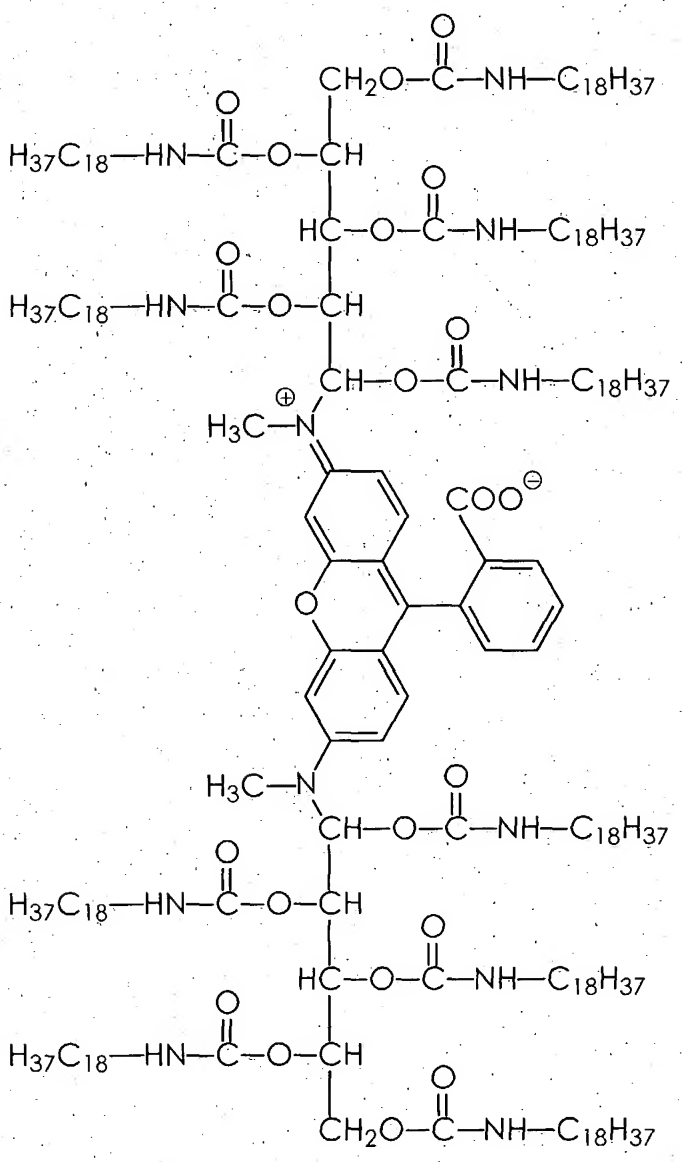
wherein n is at least about 12.

101. A phase change ink composition according to claim 1 wherein the chromogen is of the formula

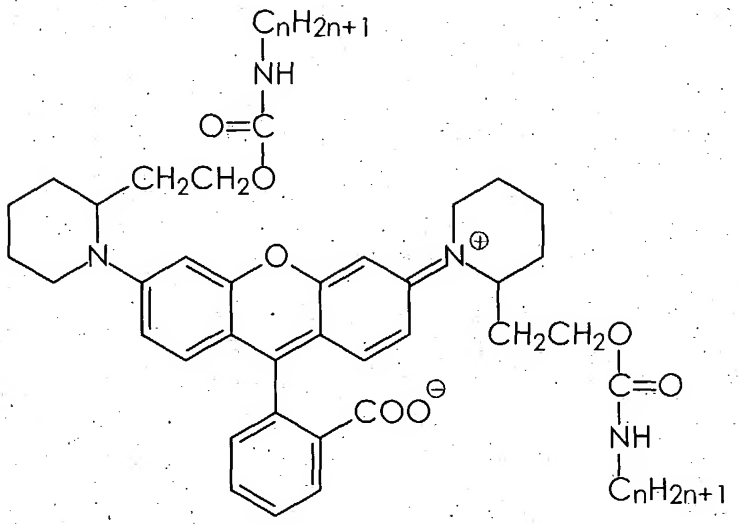


wherein n is at least about 12.

102. A phase change ink composition according to claim 1 wherein the chromogen is of the formula

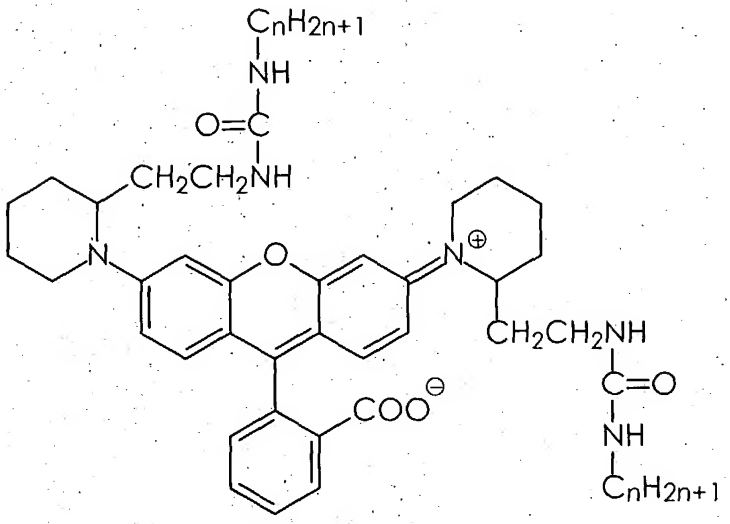


103. A phase change ink composition according to claim 1 wherein the chromogen is of the formula



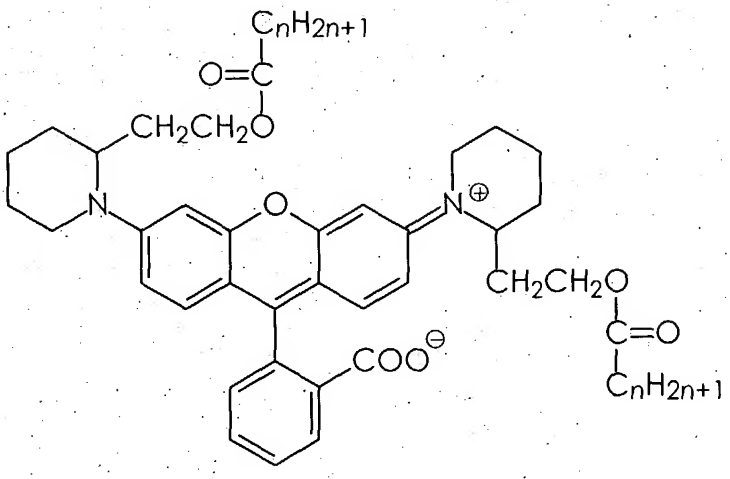
wherein n is at least about 12.

104. A phase change ink composition according to claim 1 wherein the chromogen is of the formula



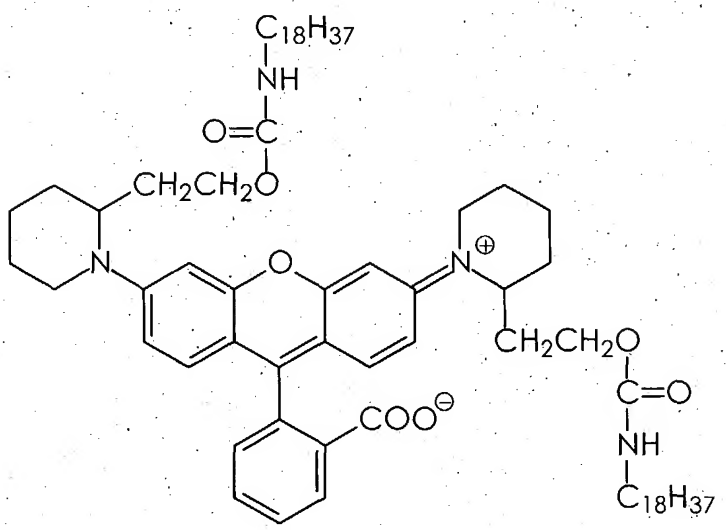
wherein n is at least about 12.

105. A phase change ink composition according to claim 1 wherein the chromogen is of the formula

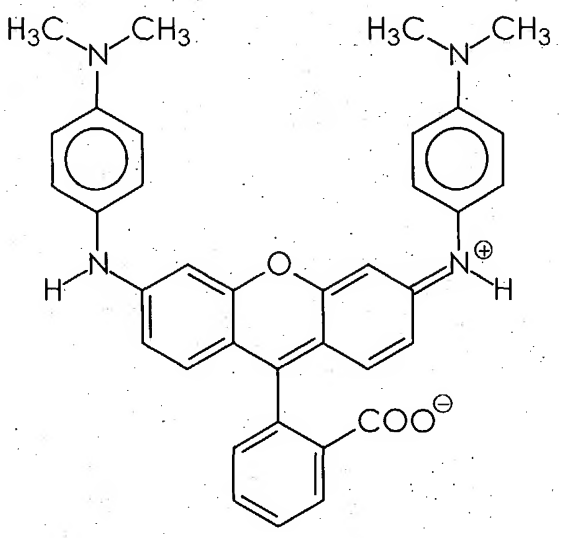


wherein n is at least about 12.

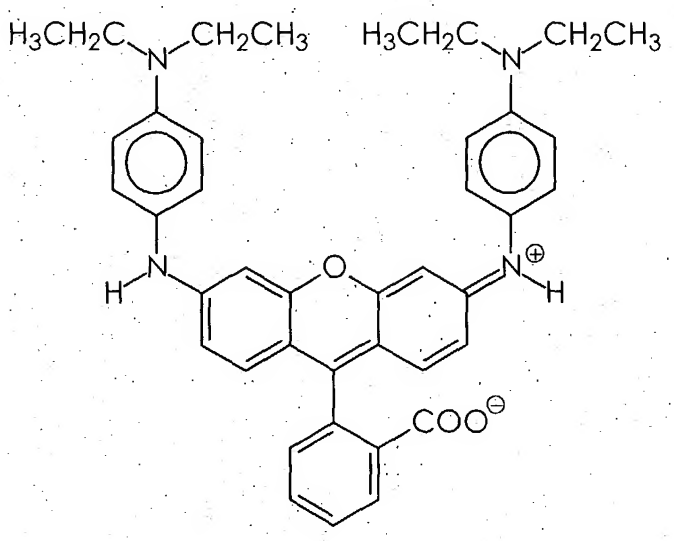
106. A phase change ink composition according to claim 1 wherein the chromogen is of the formula



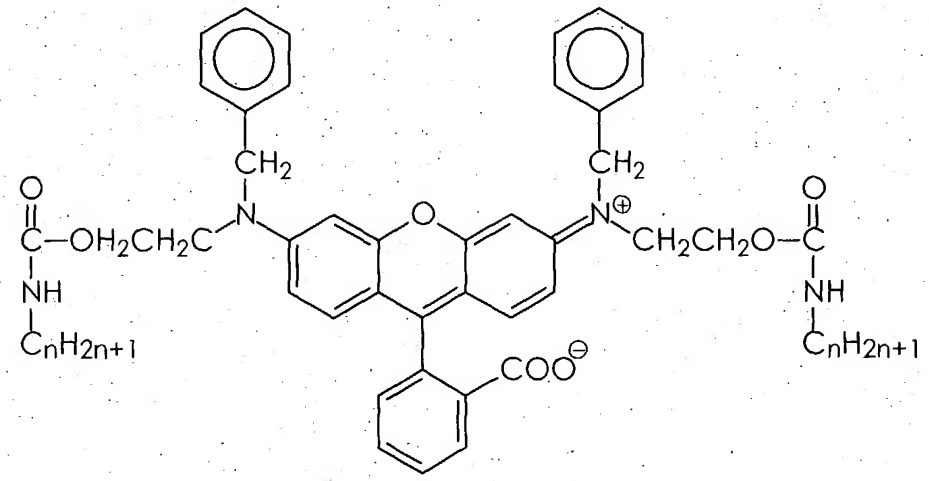
107. A phase change ink composition according to claim 1 wherein the chromogen is of the formula



108. A phase change ink composition according to claim 1 wherein the chromogen is of the formula

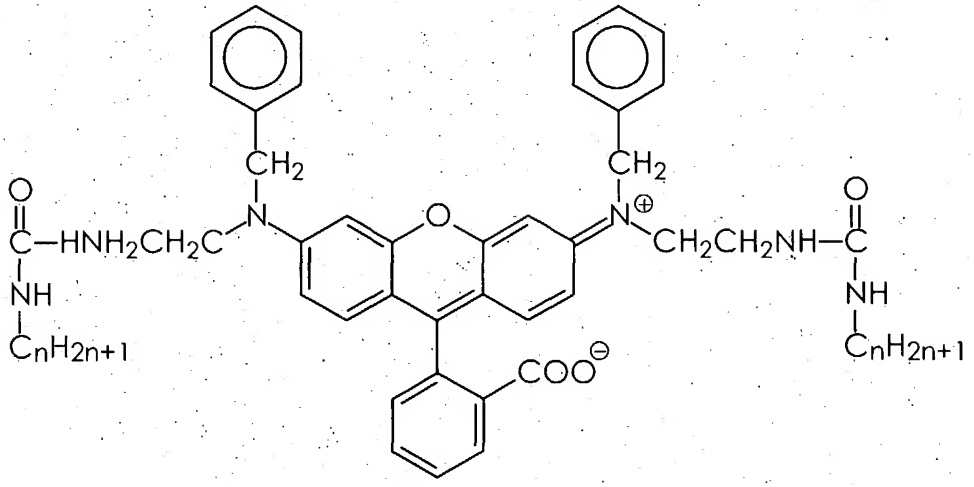


109. A phase change ink composition according to claim 1 wherein the chromogen is of the formula



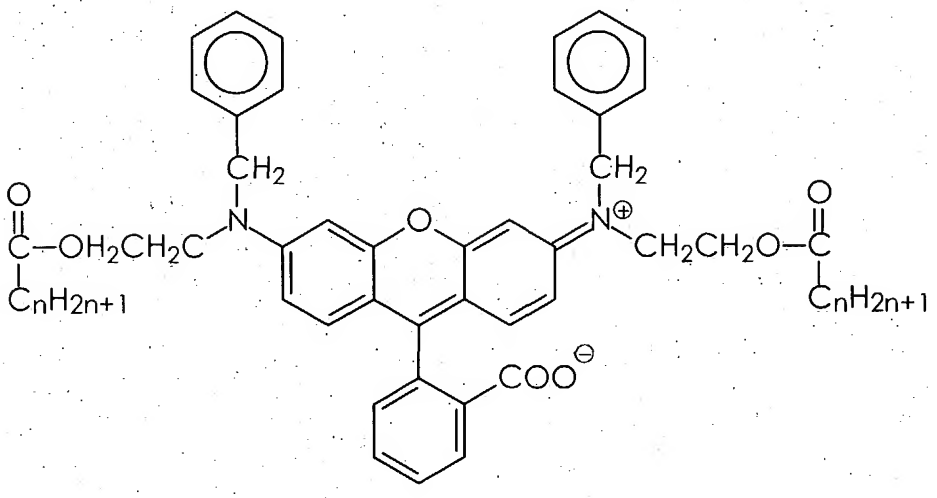
wherein n is at least about 12.

110. A phase change ink composition according to claim 1 wherein the chromogen is of the formula



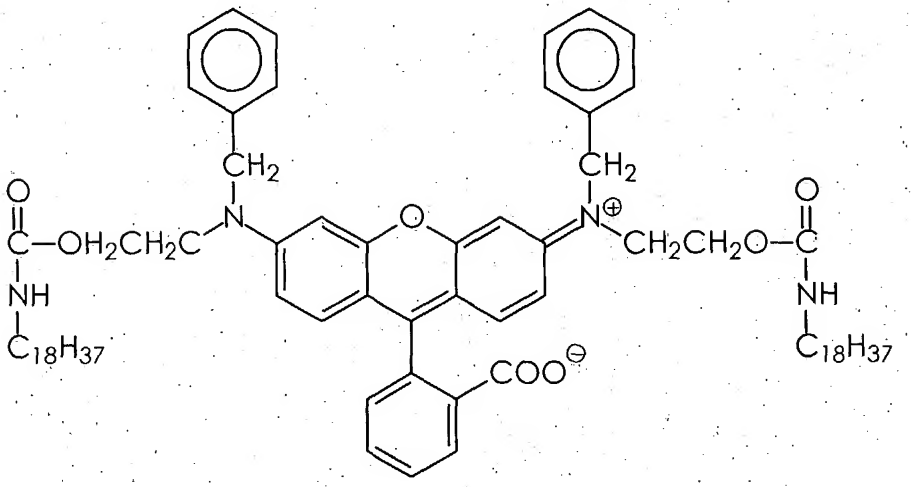
wherein n is at least about 12.

111. A phase change ink composition according to claim 1 wherein the chromogen is of the formula

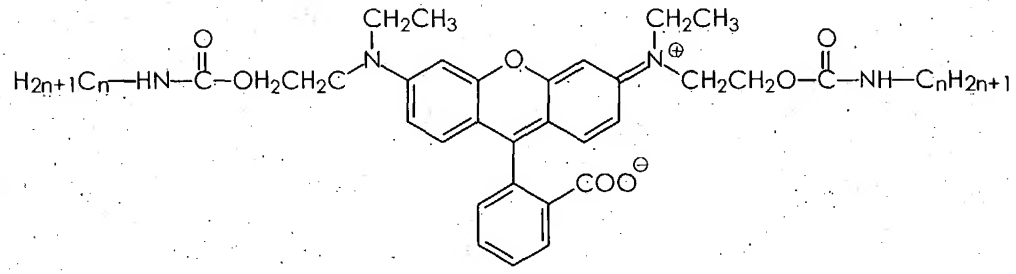


wherein n is at least about 12.

112. A phase change ink composition according to claim 1 wherein the chromogen is of the formula

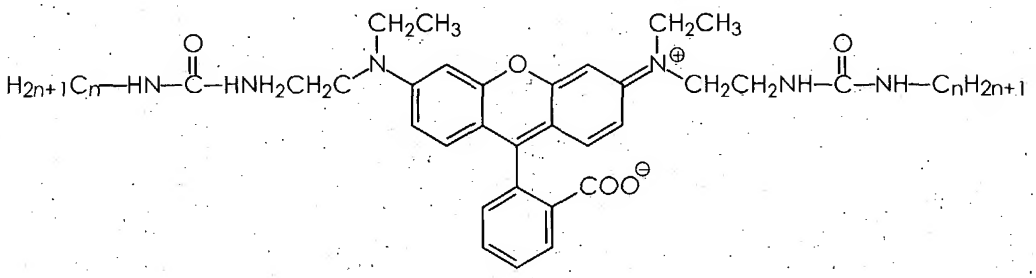


113. A phase change ink composition according to claim 1 wherein the chromogen is of the formula



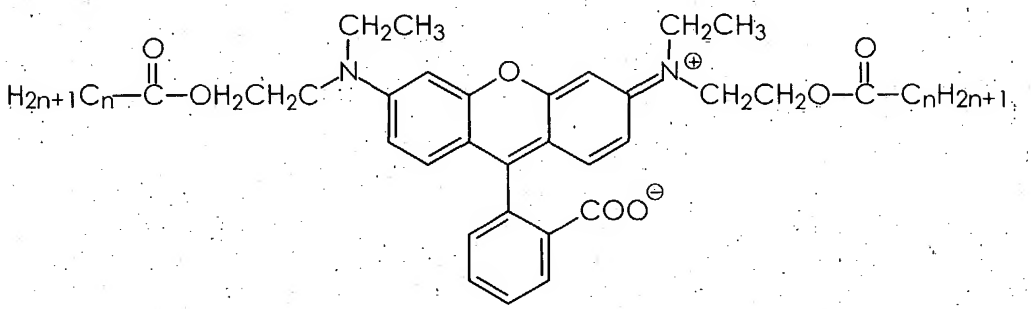
wherein n is at least about 12.

114. A phase change ink composition according to claim 1 wherein the chromogen is of the formula



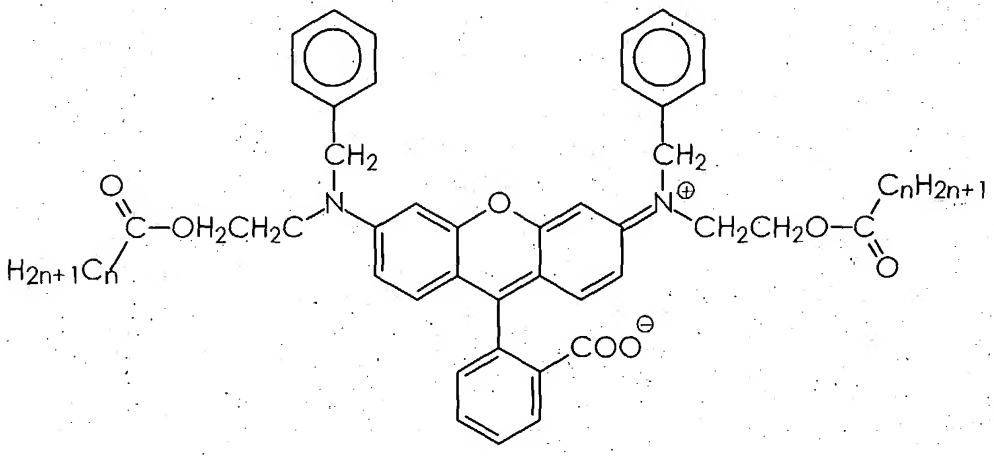
wherein n is at least about 12.

115. A phase change ink composition according to claim 1 wherein the chromogen is of the formula



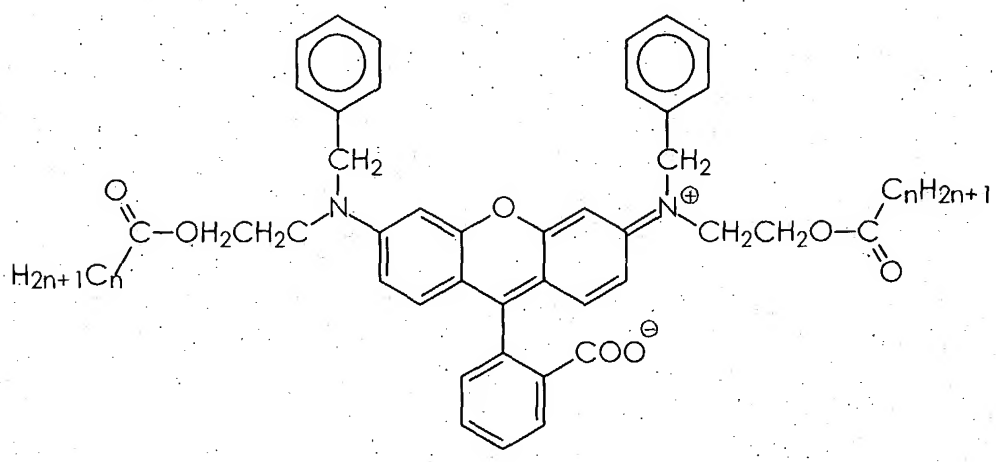
wherein n is at least about 12.

116. A phase change ink composition according to claim 1 wherein the chromogen is of the formula



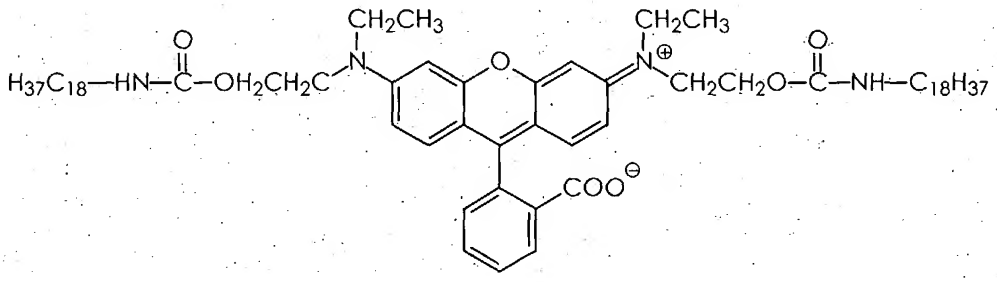
wherein n has an average value of at least about 12.

117. A phase change ink composition according to claim 1 wherein the chromogen is of the formula

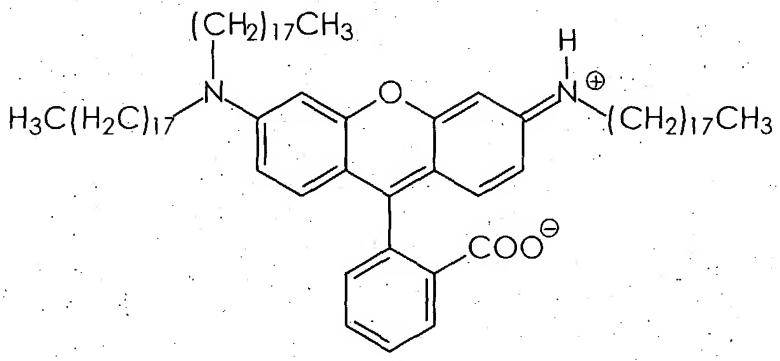


wherein n has an average value of about 50.

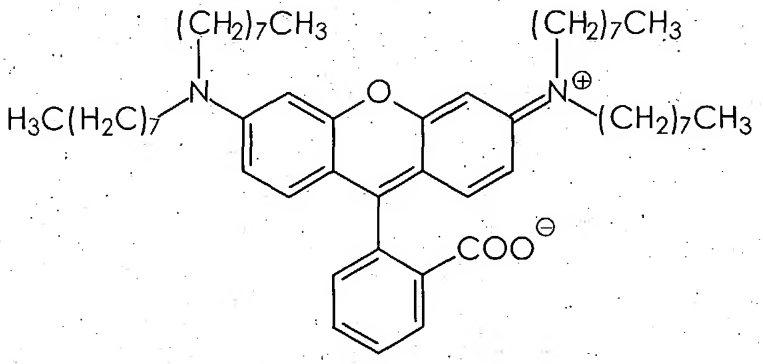
118. A phase change ink composition according to claim 1 wherein the chromogen is of the formula



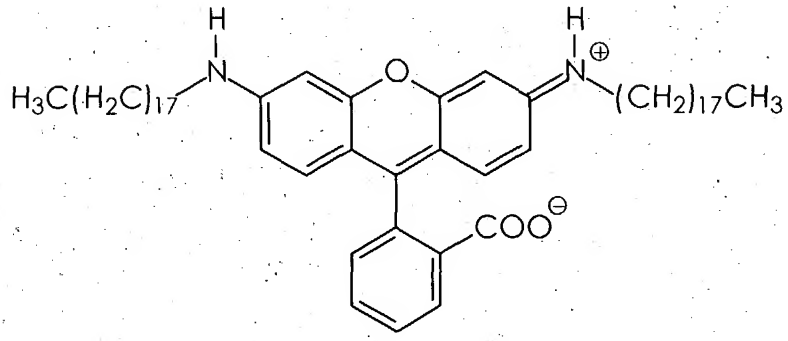
119. A phase change ink composition according to claim 1 wherein the chromogen is of the formula



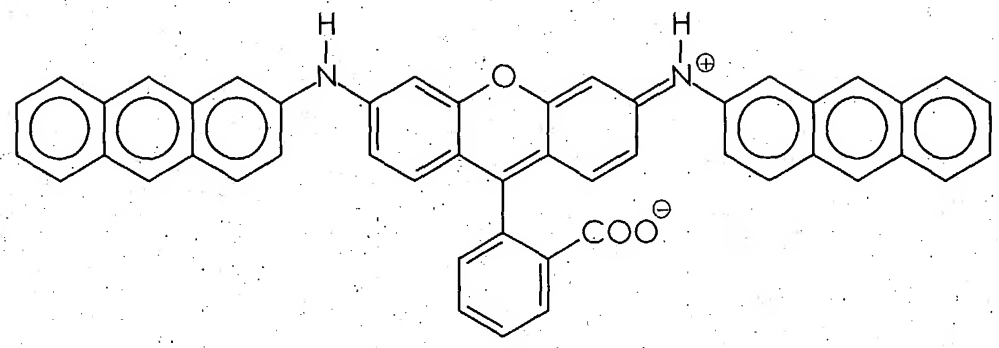
120. A phase change ink composition according to claim 1 wherein the chromogen is of the formula



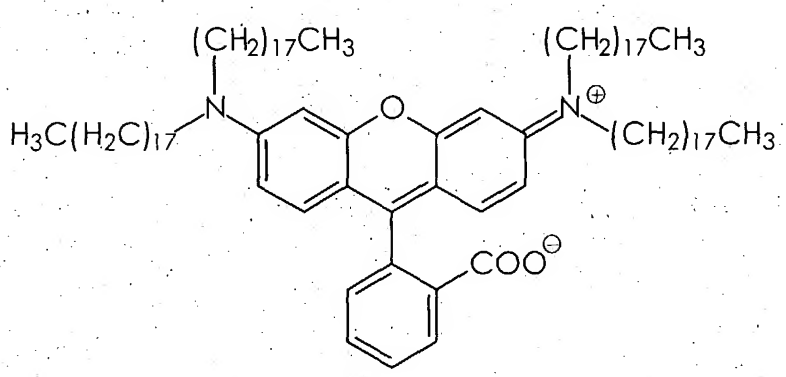
121. A phase change ink composition according to claim 1 wherein the chromogen is of the formula



122. A phase change ink composition according to claim 1 wherein the chromogen is of the formula

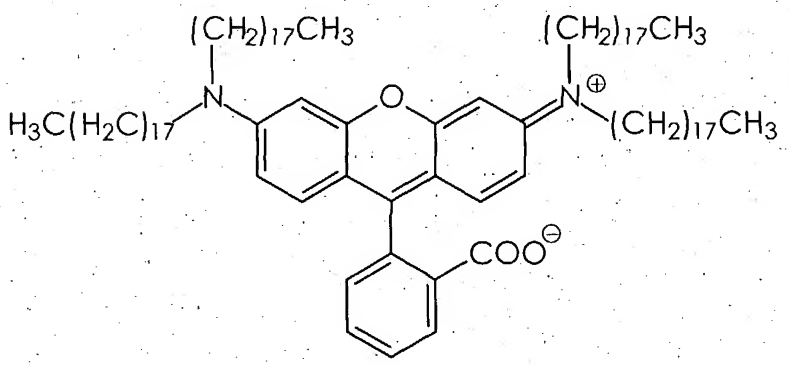


123. A phase change ink composition according to claim 1 wherein M is a zinc cation, y is 2, and the chromogen is of the formula



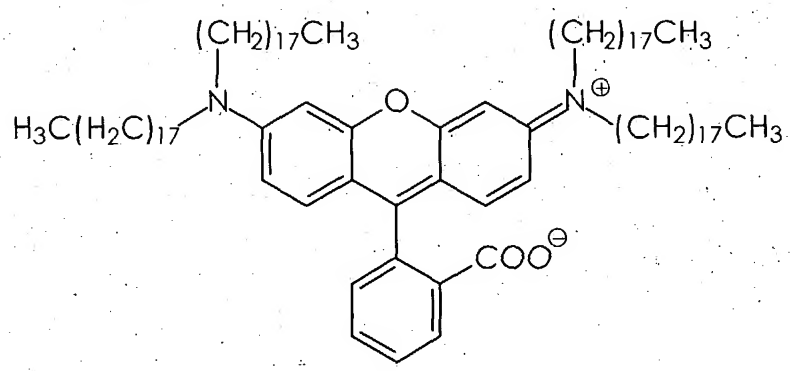
124. A phase change ink composition according to claim 123 wherein z is 2.

125. A phase change ink composition according to claim 1 wherein M is a calcium cation, y is 2, and the chromogen is of the formula



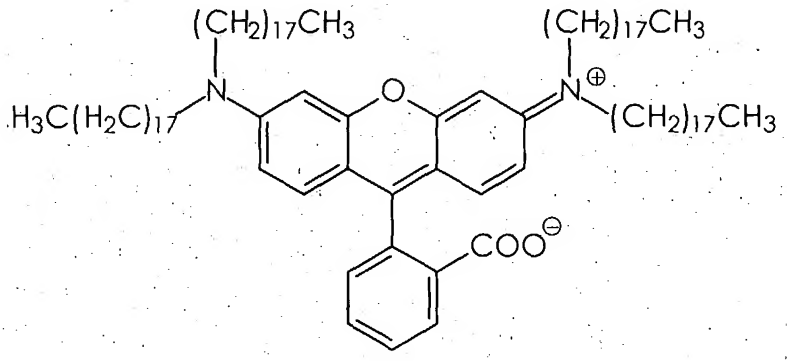
126. A phase change ink composition according to claim 125 wherein z is 2.

127. A phase change ink composition according to claim 1 wherein M is a bismuth cation, y is 3, and the chromogen is of the formula



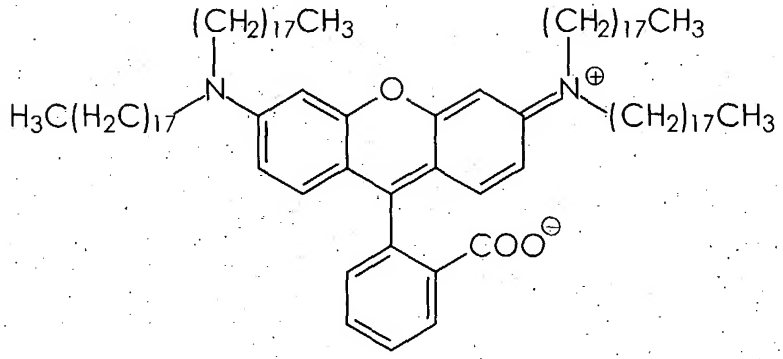
128. A phase change ink composition according to claim 127 wherein z is 3.

129. A phase change ink composition according to claim 1 wherein M is a tin cation, y is 2, and the chromogen is of the formula



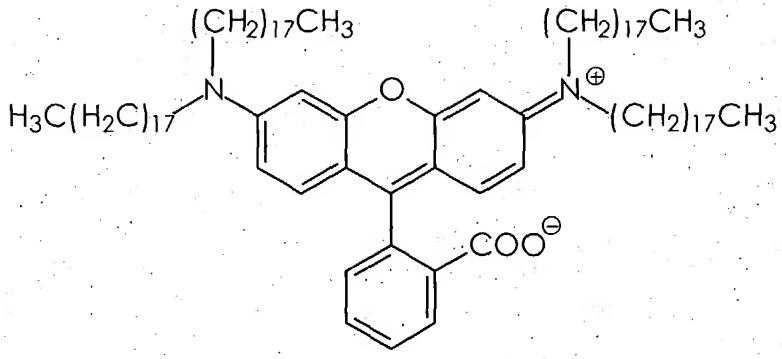
130. A phase change ink composition according to claim 129 wherein z is 2.

131. A phase change ink composition according to claim 1 wherein M is an iron cation, y is 2, and the chromogen is of the formula



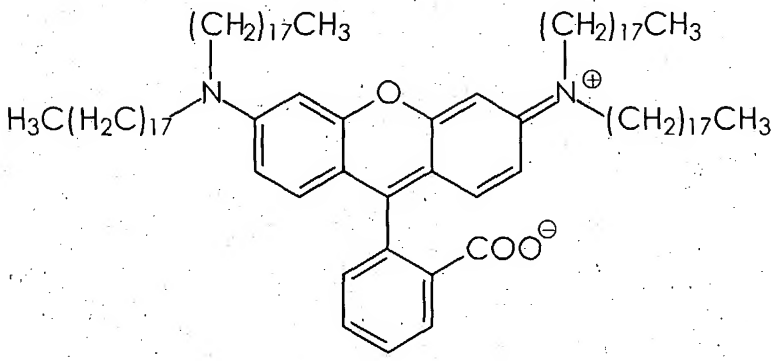
132. A phase change ink composition according to claim 131 wherein z is 2.

133. A phase change ink composition according to claim 1 wherein M is a copper cation, y is 2, and the chromogen is of the formula



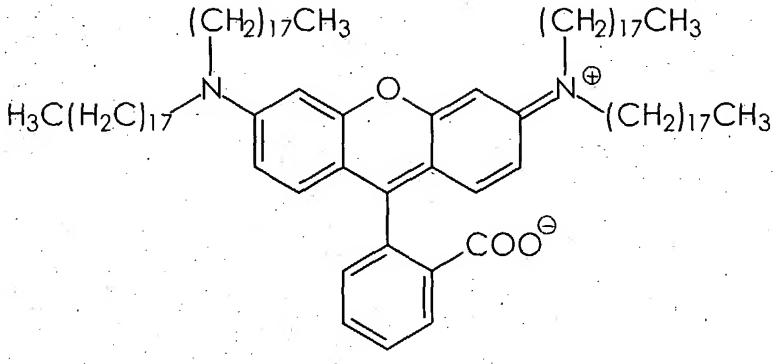
134. A phase change ink composition according to claim 133 wherein z is 2.

135. A phase change ink composition according to claim 1 wherein M is an aluminum cation, y is 3, and the chromogen is of the formula



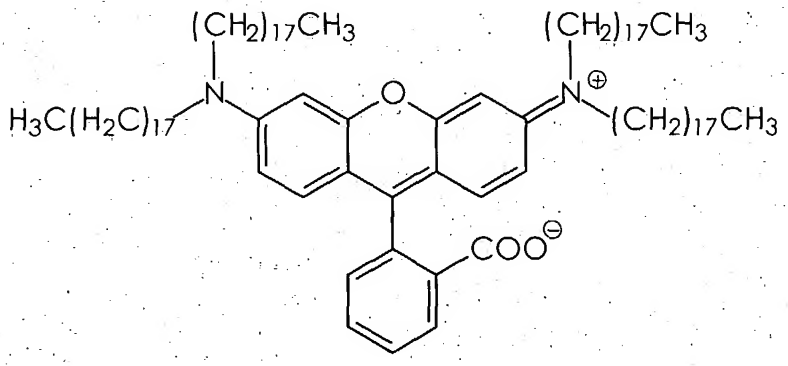
136. A phase change ink composition according to claim 135 wherein z is 3.

137. A phase change ink composition according to claim 1 wherein M is a nickel cation, y is 2, and the chromogen is of the formula



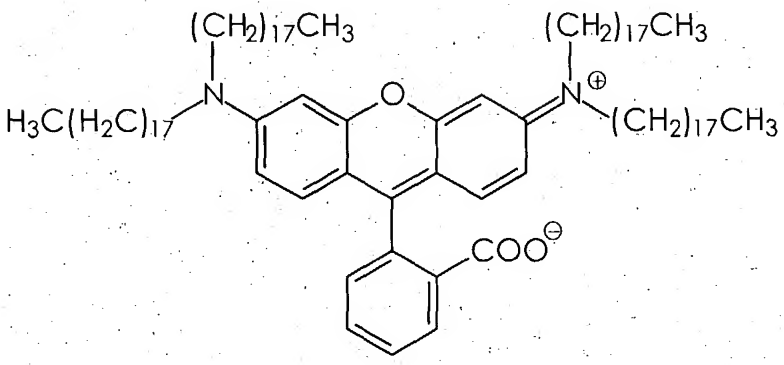
138. A phase change ink composition according to claim 137 wherein z is 2.

139. A phase change ink composition according to claim 1 wherein M is a titanium cation, y is 4, and the chromogen is of the formula



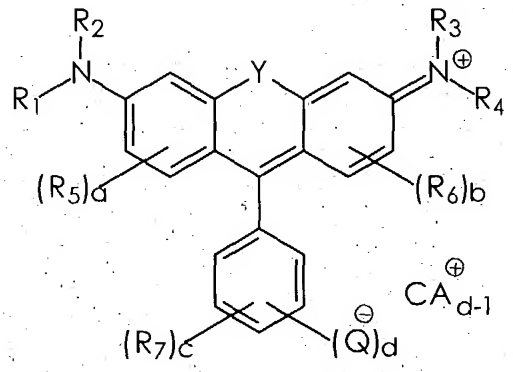
140. A phase change ink composition according to claim 139 wherein z is 4.

141. A phase change ink composition according to claim 1 wherein M is a chromium cation, y is 3, and the chromogen is of the formula



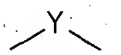
142. A phase change ink composition according to claim 141 wherein z is 3.

143. A phase change ink composition comprising a phase change ink carrier and a colorant which is the reaction product of (a) a chromogen of the formula

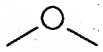


wherein R_1, R_2, R_3, and R_4 each, independently of the others, is (i) a hydrogen atom, (ii) an alkyl group, (iii) an aryl group, (iv) an arylalkyl group, or (v) an alkylaryl group, wherein R_1 and R_2 can be joined together to form a ring, wherein R_3 and R_4 can be joined together to form a ring, and wherein R_1, R_2, R_3, and R_4 can each be joined to a phenyl ring in the central structure, a and b each, independently of the others, is an integer which is 0, 1, 2, or 3, c is an integer which is 0, 1, 2, 3, or 4, each R_5, R_6, and R_7, independently of the others, is (i) an alkyl group, (ii) an aryl group, (iii) an arylalkyl group, (iv) an alkylaryl group, (v) a halogen atom, (vi) an ester group, (vii) an amide group, (viii) a sulfone group, (ix) an amine group or ammonium group, (x) a nitrile group, (xi) a nitro group, (xii) a hydroxy group, (xiii) a cyano group, (xiv) a pyridine or pyridinium group, (xv) an ether group, (xvi) an aldehyde group, (xvii) a ketone group, (xviii) a carbonyl group, (xix) a thiocarbonyl group, (xx) a sulfate group, (xxi) a sulfide group, (xxii) a sulfoxide group, (xxiii) a phosphine or phosphonium group, (xxiv) a phosphate group, (xxv) a mercapto group, (xxvi) a nitroso group, (xxvii) an acyl group, (xxviii) an

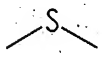
acid anhydride group, (xxix) an azide group, (xxx) an azo group, (xxxi) a cyanato group, (xxxii) an isocyanato group, (xxxiii) a thiocyanato group, (xxxiv) an isothiocyanato group, (xxxv) a urethane group, or (xxxvi) a urea group, wherein R_5, R_6, and R_7 can each be joined to a phenyl ring in the central structure,



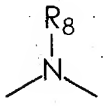
is



,

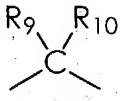


,



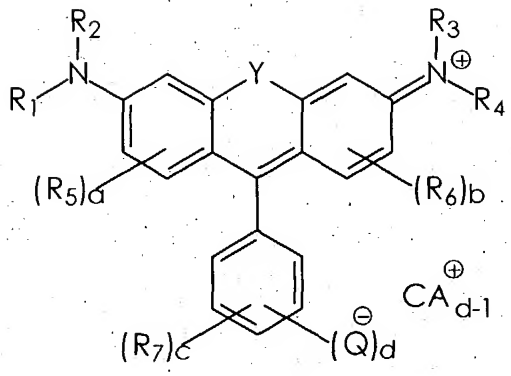
,

or

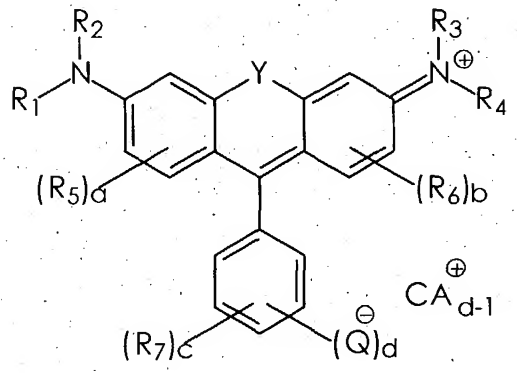


,

R_8, R_9, and R_{10} each, independently of the others, is (i) a hydrogen atom, (ii) an alkyl group, (iii) an aryl group, (iv) an arylalkyl group, or (v) an alkylaryl group, provided that the number of carbon atoms in $R_1+R_2+R_3+R_4+R_5+R_6+R_7+R_8+R_9+R_{10}$ is at least about 16, Q^- is a COO^- group or a SO_3^- group, d is an integer which is 1, 2, 3, 4, or 5, A is an anion, and CA is either a hydrogen atom or a cation associated with all but one of the Q^- groups, and (b) a metal salt of which the metal portion is either (1) a metal ion having a positive charge of +y wherein y is an integer which is at least 2, said metal ion being capable of forming a compound with at least two

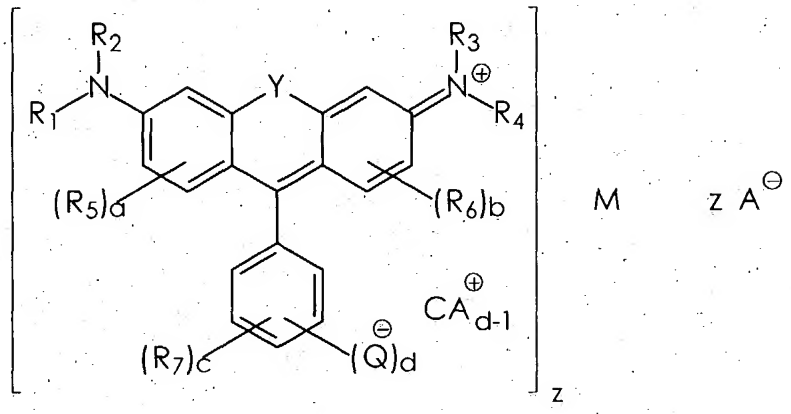


chromogen moieties, or (2) a metal-containing moiety capable of forming a compound with at least two

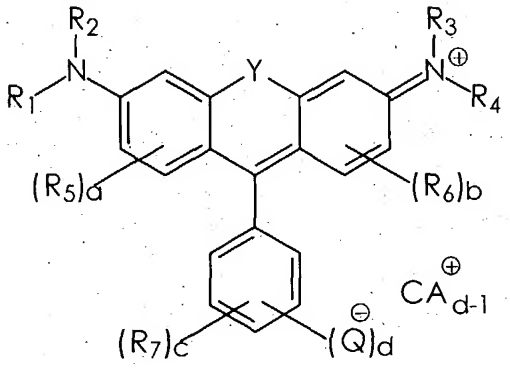


chromogen moieties.

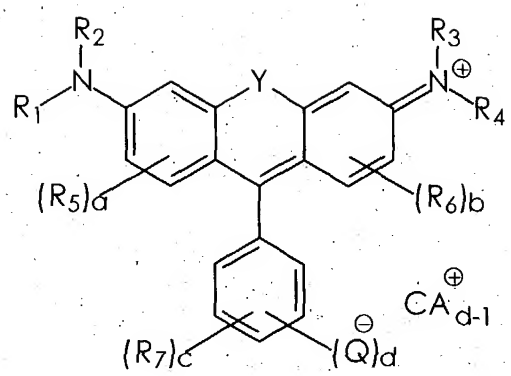
144. A process which comprises (1) incorporating into an ink jet printing apparatus a phase change ink composition comprising a phase change ink carrier and a colorant compound of the formula



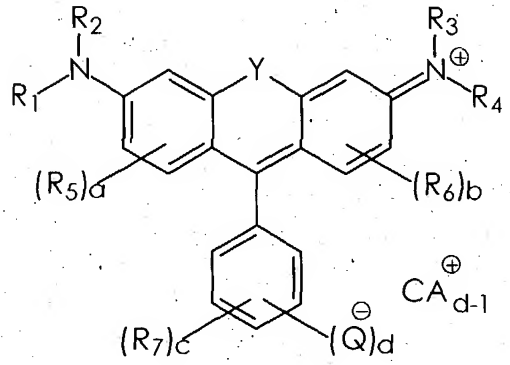
wherein M is either (1) a metal ion having a positive charge of +y wherein y is an integer which is at least 2, said metal ion being capable of forming a compound with at least two



chromogen moieties, or (2) a metal-containing moiety capable of forming a compound with at least two

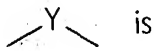


chromogen moieties, z is an integer representing the number of

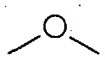


chromogen moieties associated with the metal and is at least 2, R_1, R_2, R_3, and R_4 each, independently of the others, is (i) a hydrogen atom, (ii) an alkyl group, (iii) an aryl group, (iv) an arylalkyl group, or (v) an alkylaryl group, wherein R_1 and R_2 can be joined together to form a ring, wherein R_3 and R_4 can be joined together to form a ring, and wherein R_1, R_2, R_3, and R_4 can each be joined to a phenyl ring in the central structure, a and b each, independently of the others, is an integer which is 0, 1, 2, or 3, c is an integer which is 0, 1, 2, 3, or 4, each R_5, R_6, and R_7, independently of the others, is (i) an alkyl group, (ii) an aryl group, (iii) an arylalkyl group, (iv) an alkylaryl group, (v) a halogen

atom, (vi) an ester group, (vii) an amide group, (viii) a sulfone group, (ix) an amine group or ammonium group, (x) a nitrile group, (xi) a nitro group, (xii) a hydroxy group, (xiii) a cyano group, (xiv) a pyridine or pyridinium group, (xv) an ether group, (xvi) an aldehyde group, (xvii) a ketone group, (xviii) a carbonyl group, (xix) a thiocarbonyl group, (xx) a sulfate group, (xxi) a sulfide group, (xxii) a sulfoxide group, (xxiii) a phosphine or phosphonium group, (xxiv) a phosphate group, (xxv) a mercapto group, (xxvi) a nitroso group, (xxvii) an acyl group, (xxviii) an acid anhydride group, (xxix) an azide group, (xxx) an azo group, (xxxi) a cyanato group, (xxxii) an isocyanato group, (xxxiii) a thiocyanato group, (xxxiv) an isothiocyanato group, (xxxv) a urethane group, or (xxxvi) a urea group, wherein R_5, R_6, and R_7 can each be joined to a phenyl ring in the central structure,



is



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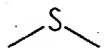

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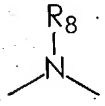

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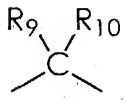
or



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R_8, R_9, and R_{10} each, independently of the others, is (i) a hydrogen atom, (ii) an alkyl group, (iii) an aryl group, (iv) an arylalkyl group, or (v) an alkylaryl group, provided that the number of carbon atoms in $R_1+R_2+R_3+R_4+R_5+R_6+R_7+R_8+R_9+R_{10}$ is at least about 16, Q^- is a COO^- group

or a SO_3^- group, d is an integer which is 1, 2, 3, 4, or 5, A is an anion, and CA is either a hydrogen atom or a cation associated with all but one of the Q^- groups; (2) melting the ink; and (3) causing droplets of the melted ink to be ejected in an imagewise pattern onto a substrate.

145. A process according to claim 144 wherein the printing apparatus employs a piezoelectric printing process wherein droplets of the ink are caused to be ejected in imagewise pattern by oscillations of piezoelectric vibrating elements.

146. A process according to claim 144 wherein the substrate is a final recording sheet and droplets of the melted ink are ejected in an imagewise pattern directly onto the final recording sheet.

147. A process according to claim 144 wherein the substrate is an intermediate transfer member and droplets of the melted ink are ejected in an imagewise pattern onto the intermediate transfer member followed by transfer of the imagewise pattern from the intermediate transfer member to a final recording sheet.

148. A process according to claim 147 wherein the intermediate transfer member is heated to a temperature above that of the final recording sheet and below that of the melted ink in the printing apparatus.